AI Hub Data Commons Collaborative Consulting Services
Massachusetts Technology Collaborative
RFP# 2026-JAII-01

Request for Proposal - Response

09/23/2025

Submitted To:
Massachusetts Technology Collaborative
75 North Drive
Westborough, MA 01581-3340

Submitted by:

NOETIC PARTNERS, INC.

UEI: PHEPWDYXVBH7 | **CAGE**: 0SQD2
Address: 9907 Georgetown Pike,
Great Falls VA 22066 USA

For further information, please contact Noetic Partners:

Heidi Briguglio, Chief Operations Officer, 202-207-7600 |
Heidi.Briguglio@noeticpartners.com

Justin Magruder Ph.D., Managing Partner, 212-879-1161 |
Justin.Magruder@noeticpartners.com

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1. Application Cover Sheet (Attachment A)

Attachment A

Application Cover Sheet

Name of Respondent: **Noetic Partners, Inc.**			
Mailing Address: **9907 Georgetown Pike**	City/Town: **Great Falls**	State: **Virginia**	Zipcode: **22066**
Telephone: **212-879-1161**	Fax: NA	Web Address: https://www.noeticpartners.com	
Primary Contact for Clarification: **Justin Magruder Ph.D**	Primary Contact E-mail Address: Justin.Magruder@noeticpartners.com		
Authorized Signatory: **Justin Magruder Ph.D**	Authorized Signatory E-mail Address: Justin.Magruder@noeticpartners.com		
LegalStatus/Jurisdiction(e.g a Massachusetts Corporation, LLC, LLP, etc.): **Delaware Corporation**	Respondents W-9: **Attached in section 9** Respondents UEI No. **PHEPWDYXVBH7**		

2. Cover Letter

Noetic Partners is pleased to submit this proposal in response to the Massachusetts Technology Collaborative Request for Proposals (RFP No. 2026-JAII-01) for Consulting Services to support the design, development, and launch of the Data Commons Collaborative (DCC).

We are confident that our extensive experience in AI, data strategy, and public sector engagements aligns perfectly with MassTech's strategic goals to accelerate AI development, commercial growth, and equitable access across the Commonwealth through a centralized data platform. We are fully committed to leveraging AI in a secure, ethical, equitable, and transparent manner, as outlined in the RFP.

We propose Justin Scott Magruder, Ph.D. Computer Science, an accomplished AI, IT, and data strategist and architect with a +25-year career, as the Subject Matter Expert to lead this engagement. Our team is strengthened by the inclusion of Dr. Richard Y. Wang, Principal Research Scientist at MIT and founder of the Information Quality field, whose expertise in data quality and Chief Data Officer roles directly supports the DCC's emphasis on ethical, fair, and high-quality data management.

3. Company Profile and Relevant Experience

With over two decades of experience, Noetic Partners specializes in pioneering AI-driven solutions and transforming complex data ecosystems into agile, value-driven assets. Our expertise includes curating high-quality datasets for machine learning (ML) and large language models (LLMs). We have a proven track record of building foundational data platforms and championing data governance to enable scalable, secure, and compliant data operations. We have successfully implemented Agile DataOps, Data Fabric, and Data Mesh frameworks to ensure data is "AI-ready." Our experience includes prior work with government agencies.

3.1. Relevant Project Examples based on Public Information

- **AI-Ready Cloud Native Data Platform Development (2021-2024):** Led the design and implementation of a GovCloud-based, AI-ready Cloud Native Data Platform. This project enabled seamless data ingestion, transformation, and curation for AI/ML workflows, supporting Agile DataOps principles to automate pipelines and ensure data quality, security, and compliance. The integration of a Data Fabric and Data Mesh reduced time-to-insight by 40%. This is similar to the DCC's need for technical architecture, dataset curation, and integration.

- **LLM-Based Resume Matching and Team Selection (2024):** Curated a database of over 10,000 resumes and developed an AI process using an open-source LLM to match candidates to contract requirements. This automated contract ingestion enhanced talent acquisition efficiency and fit accuracy by 35% through Master Data Management (MDM) curation of structured resume data. This demonstrates our capability in AI fairness frameworks and bias mitigation, aligning with DCC's ethical AI requirements.

- **Technical Due Diligence for AI-Integrated Solutions (2021-2022):** Conducted technical due diligence on Koverse, an Apache Accumulo-based storage layer, for the Tenjin AI platform, which incorporated Dataiku and ChatGPT 4.0. The focus was on MDM standards to ensure secure, scalable data access and governance for vertically integrated AI workflows. This experience directly supports DCC's security, governance, and compliance needs.

3.2. Experience with Master Data Platforms and AI-Ready Data Systems

Ther Noetic team has extensive experience in developing and implementing robust data platforms, and AI and advanced analytic systems for some of the world's most demanding enterprises. His expertise includes:

- **AI and Advanced Decision Support Analytics**.
- **Master Data Management (MDM)**: At companies like **JP Morgan Securities, NYSE, LSEG, SAIC, Freddie Mac, UBS, and Deutsche Bank**, Noetic architected and led development of master data platforms that served as the "golden source" of truth for critical business processes including research, trading, risk management, portfolio management, and performance management, for key subjects such as customers, products, and financial instruments critical to the success of quantitative analytics and AI programs. These systems

are essential for regulatory reporting, risk management, and enterprise-wide analytics, and for enabling AI solutions.

- **Reference Data Systems**: Noetic has a deep understanding of reference data, having developed systems for JP Morgan Securities, Deutsche Bank, the London Stock Exchange Group and other financial institutions to manage and distribute market data, exchange codes, and other critical reference information.
- **Data Warehouse and Data Lakehouse Systems**: The Noetic team led the development of advanced data warehousing and data lakehouse solutions. These systems were designed to handle massive volumes of structured and unstructured data, enabling business intelligence, reporting, and advanced analytics for operational and strategic decision-making.

4. Recommended Platform Strategy

The Noetic Elastic Data Platform (NEDP) is a high-performance, cloud-native, AI-ready data lakehouse architecture engineered to address the complex demands of modern enterprises, including public-sector initiatives like the Massachusetts AI Hub's Data Commons Collaborative (DCC).

Designed for massive scalability, security, and compliance, NEDP seamlessly integrates data ingestion, processing, curation, and analytics while supporting advanced AI capabilities such as synthetic data generation, bias detection, and ethical governance. By leveraging Agile DataOps principles, NEDP transforms disparate datasets into trusted, AI-ready assets, enabling the DCC's goals of aggregating curated datasets, fostering equitable AI development, and providing an extensible platform for researchers, government entities, startups, and industry partners.

This technical description outlines NEDP's architecture, core components, alignment with DCC requirements, and implementation methodology, drawing on Noetic Partners' proven expertise in deploying similar platforms for regulated environments.

At its core, NEDP embodies a producer-consumer model that merges the flexibility of data lakes with the structure of data warehouses, creating a unified lakehouse environment. Deployed on AWS GovCloud or Azure Government Cloud for FedRAMP compliance, it adheres to stringent standards like NIST, CDMC, and HIPAA, ensuring secure handling of sensitive data.

The platform's layered data zones—Bronze (raw ingestion), Silver (cleansed and validated), and Gold (curated and enriched)—facilitate progressive refinement of structured, semi-structured, and unstructured data. For instance, raw datasets from diverse sources (e.g., APIs, databases, or third-party feeds) land in Bronze S3 buckets with encryption-at-rest (SSE-KMS) and versioning enabled. Transformations in Silver and Gold layers use Delta Lake for ACID transactions, schema evolution, and time-travel capabilities, allowing users to query historical data versions without disrupting production workflows.

Key technical components include:

i. **Data Ingestion and Orchestration**: Apache Airflow, containerized on Amazon EKS (Elastic Kubernetes Service) or Azure AKS, orchestrates workflows as Directed Acyclic Graphs (DAGs). This enables automated, fault-tolerant pipelines for batch and streaming ingestion, supporting tools like Apache Kafka for real-time data streams. Airflow integrates with dbt (Data Build Tool) for SQL-based transformations, embedding automated tests for data quality (e.g., uniqueness, referential integrity, and null checks). For DCC's dataset aggregation, NEDP can ingest from multiple sources, applying FAIR principles (Findable, Accessible, Interoperable, Reusable) via metadata tagging in Unity Catalog.

ii. **Unified Analytics Engine**: Databricks serves as the compute layer, providing Spark-based ETL, machine learning (ML), and SQL analytics. Pre-installed libraries like Delta Lake, PyArrow, and MLflow support scalable processing of petabyte-scale datasets. NEDP's Unity Catalog acts as a centralized metadata repository, enforcing role-based access control (RBAC) with Okta federation for single sign-on. This ensures fine-grained permissions, audit trails, and data lineage, critical for DCC's security and governance needs. For example, provenance tagging tracks dataset origins, enabling compliance with ethical AI standards by documenting transformations and sources.

iii. **AI and Synthetic Data Capabilities**: NEDP is inherently AI-enabled, integrating tools for synthetic data generation to address data scarcity and privacy concerns. Using libraries like Synthea, SDV (Synthetic Data Vault), or custom GANs (Generative Adversarial Networks) within Databricks notebooks, it generates realistic synthetic datasets while preserving statistical properties. Differential privacy techniques (e.g., via libraries like Opacus) add noise to protect sensitive information, aligning with DCC's emphasis on ethical AI. Bias detection frameworks such as AIF360 or Fairlearn are embedded, allowing automated audits for demographic parity, equalized odds, and disparate impact. NEDP's MLflow integration tracks model experiments, ensuring reproducibility and explainability through SHAP (SHapley Additive exPlanations) values, which provide interpretable insights into AI decisions.

iv. **Visualization and Self-Service**: Tableau, hosted on AWS, connects to Gold-layer data marts for interactive dashboards and reports. This supports DCC's extensible platform by enabling self-service analytics, with embedded governance to restrict access based on user roles. For instance, researchers can query curated datasets via SQL endpoints, while administrators monitor usage through Grafana dashboards integrated with Prometheus for alerting.

NEDP's security framework is robust, incorporating zero-trust principles with multi-factor authentication (MFA), encryption in transit (TLS 1.3), and least-privilege IAM policies. Compliance with FedRAMP Moderate ensures suitability for government data, while automated vulnerability scanning via tools like AWS Inspector mitigates risks. Scalability is achieved through

auto-scaling clusters in Databricks and EKS, handling variable workloads without downtime—essential for DCC's multi-stakeholder environment.

Implementation follows Noetic's Agile DataOps methodology, as detailed in Dr. Justin Magruder's framework "From Chaos to Clarity." Phased delivery begins with requirements gathering (Task 1), involving stakeholder workshops to catalog datasets and prioritize features. Infrastructure setup (Tasks 2-4) establishes cloud environments, followed by orchestration and transformation (Tasks 5-6) using Airflow and dbt. AI-specific integrations for synthetic data and fairness (aligned with Tasks 3-5) are tested iteratively in 2-week sprints, with continuous integration/continuous deployment (CI/CD) via Git. Tableau migration and user training (Tasks 7-8) ensure adoption, culminating in a 120-day warranty for defect resolution.

For the DCC, NEDP offers transformative benefits: centralized access to curated datasets reduces silos, synthetic generation accelerates AI research, and built-in fairness tools promote equitable outcomes. Its modular design supports extensibility, such as integrating blockchain for immutable provenance (e.g., Ethereum-based ledgers) or APIs for external reporting. With a track record in public-sector deployments (e.g., IRS, SAIC), NEDP minimizes risks through automated testing and governance, delivering a secure, innovative platform that empowers Massachusetts' AI ecosystem.

In summary, NEDP positions the DCC as a leader in ethical AI by providing a scalable, compliant foundation for data-driven innovation. Backed by Noetic's expert team—including Dr. Richard Wang, the founder of Information Quality— this platform ensures high-fidelity data, fostering collaboration across sectors while mitigating biases and privacy risks.

5. Proposed Approach to Services

Noetic Partners proposes a comprehensive, phased approach to delivering the required Services for the DCC, leveraging our expertise in AI-ready data platforms, ethical AI frameworks, and secure governance. Our methodology emphasizes Agile DataOps to ensure iterative development, stakeholder collaboration, and alignment with MassTech's goals for an extensible platform that aggregates curated datasets, enables synthetic data generation, and promotes fair, secure AI development. We invite MassTech to consider alternatives where applicable for enhanced performance or cost-efficiency, such as integrating blockchain for immutable provenance tagging.

Our approach is structured around the eight key Service areas outlined in the RFP:

i. **Program Management & Coordination**
   - Develop an integrated project plan using Agile methodologies, including sprints, backlogs, and milestones aligned with DCC deliverables (e.g., initial data catalog by Month 3, full launch by Month 12).
   - Conduct bi-weekly stakeholder meetings with MassTech, researchers, government, startups, and industry partners, providing real-time updates via dashboards (e.g., using Jira or Microsoft Project).
   - Ensure milestones are met through risk mitigation strategies, including contingency planning and performance metrics tracking. Alternative: Incorporate AI-driven

predictive analytics for proactive milestone adjustments.

ii. Technical Architecture & Platform Development

- Design and build a scalable backend infrastructure using cloud-native tools (e.g., AWS GovCloud for compliance), integrating open-source platforms like CKAN or Dataverse for metadata management and discovery.
- Implement role-based access control (RBAC) and identity management with tools like Okta or Azure AD, ensuring secure, tiered dataset access.
- Develop a central ledger for "Commons Credits" using blockchain (e.g., Ethereum) for transparent tracking, and enable API-based data access with usage analytics via tools like Apache Kafka. Alternative: Use Data Mesh for decentralized domain-specific data ownership, enhancing scalability beyond centralized models.

iii. Dataset Curation and Integration

- Assist in curating initial datasets by applying FAIR principles (Findable, Accessible, Interoperable, Reusable), drawing from our MDM experience to ensure metadata completeness.
- Support ingestion pipelines with ETL tools (e.g., Apache Airflow), version control via Git, and provenance tagging for auditability.
- Integrate disparate data sources, ensuring compatibility and quality checks. Alternative: Leverage LLMs for automated metadata enrichment to accelerate curation.

iv. Synthetic Data Capability

- Integrate synthetic data tools like SDV, Synthea, or CARLA into the platform, building validation pipelines to ensure realism and compliance.
- Implement privacy-preserving techniques (e.g., differential privacy) and audit policies to align with ethical standards.
- Generate sample outputs for testing, with dashboards for monitoring synthetic data quality. Alternative: Incorporate generative AI (e.g., GANs) for domain-specific synthetic datasets, improving coverage for underrepresented data.

v. AI Fairness and Bias Framework

- Implement bias detection tools (e.g., AIF360, Fairlearn) with auditing workflows, including demographic parity analysis and mitigation reports.
- Establish dashboards for ongoing bias impact documentation, ensuring transparency.
- Conduct pre-deployment audits as per ethical guidelines. Alternative: Use explainable AI (XAI) models to provide interpretable bias insights, enhancing user trust.

vi. Security, Governance & Compliance

- Define RBAC, MFA, encryption (e.g., AES-256), and dataset tiering, with comprehensive logging and audit trails using tools like Splunk.
- Enforce terms of use and ethical data handling through policy frameworks aligned with NIST and FedRAMP.
- Ensure compliance with privacy laws (e.g., GDPR, HIPAA where applicable). Alternative: Integrate zero-trust architecture for enhanced security in multi-user environments.

vii. Testing, Rollout, and Adoption

- Conduct end-to-end QA, including unit, integration, and user acceptance testing, with automated scripts for efficiency.
- Train users and administrators via workshops, documentation, and support materials.
- Support public launch with pilot user feedback loops and industry engagement plans. Alternative: Use A/B testing for rollout phases to optimize user adoption.

viii. Deliverables

- We commit to delivering all specified items, including Detailed Project Plan, Platform Architecture Documentation, Initial Data Catalog, Synthetic Data Tooling, Fairness Dashboard, Security Implementation, Training Materials, Sample Commons Credits Ledger, Industry Engagement Explanation, and Pilot Feedback. Deliverables will be phased, with milestones tied to payments.

This approach ensures a robust, secure, and innovative DCC, with a timeline feasible within 12-18 months based on our past projects. Total projected hours: ~5,000 across phases, with flexibility for alternatives.

6. Approach to Ethical and Secure AI

Our approach to AI development is rooted in the principles of fairness, transparency, and accountability, aligning with MassTech's foundational principles for the DCC. We believe that the oversight of AI agents should focus on accuracy, fairness, transparency, security, and privacy, in accordance with ethical AI standards.

Our methodology for addressing ethical and secure AI practices includes:

- **Robust Data Governance:** We implement robust data governance to ensure scalable, secure, and compliant data operations from the outset. We have experience with frameworks like DataOps and Data Mesh to ensure data quality and security.

- **Bias Auditing:** We will conduct thorough bias testing and mitigation reports, including demographic parity analysis, as a key deliverable. We can also provide ongoing or periodic auditing as required.

- **Compliance & Security:** We have extensive knowledge of applicable regulations and standards, including **HIPAA, CJIS, NIST**, and **FedRAMP**. Our experience includes the design and implementation of GovCloud-based platforms and we are committed to transparency, compliance with regulatory requirements, and alignment with MassTech's mission.

7. Bios of Key Personnel

i. Justin Scott Magruder, Ph.D. – Data Science, Architecture Subject Matter Expert

Dr. Magruder is an accomplished AI, IT, and data strategist with a distinguished 25-year career with some of the worlds most sophisticated institutions. As a graduate of Deerfield Academy in Deerfield Mass, he has pioneered master data management (MDM), data curation, and AI-driven solutions for government agencies, global financial institutions, high-tech, and Fortune 500 companies. He has demonstrable expertise in curating high-quality datasets for ML and LLMs, delivering measurable improvements in performance, risk management, and decision-making. Mr. Magruder has consistently applied his expertise to technical due diligence for AI integrations and has led cross-functional teams to implement Agile DataOps, Data Fabric, and Data Mesh frameworks, ensuring data is truly AI-ready. His resume and a list of several of his publications and speaking engagements are included in this response.

ii. Richard Y. Wang, Ph.D. – Information Quality and Chief Data Officer Subject Matter Expert

Dr. Richard Y. Wang is widely acknowledged as the "Founder of Information Quality," having established it as a field of study over the past three decades. He is the founder and executive director of the Chief Data Officer and Information Quality (CDOIQ) Program at the Massachusetts Institute of Technology. Dr. Wang has championed the importance of information quality at the highest organizational levels and led the movement to establish the Chief Data Officer (CDO) role, culminating in its widespread adoption, including statutory mandates in the U.S. federal government through the Foundations for Evidence-Based Policymaking Act of 2018. He has extensive experience in academia, research, and leadership roles in both public and private sectors, focusing on information quality and data governance. As Principal Research Scientist at MIT Sloan School of Management and tenured University Professor at the University of Arkansas at Little Rock, he has authored numerous books and articles on data quality, established degree programs and awards in the field, and served in key CDO roles for the U.S. Army and the State of Arkansas.

iii. John Randolph Talburt, Ph.D. – Applied Mathematics, Computer & Data Science Subject Matter Expert

Experienced Graduate Program Coordinator with a demonstrated history of working in the higher education industry. Skilled in Business Process, Analytical Skills, Oracle Database, Databases, and IT Strategy. Strong quality assurance professional with a PhD focused in Mathematics from University of Arkansas at Fayetteville

iv. Daniel Lee Pullen, Ph.D. – Computer & Data Science Subject Matter Expert

Dr. Pullen is a seasoned data science leader with over a decade of experience in enterprise data architecture, entity resolution, and AI-driven analytics. As Chief Data Scientist and Data Architect at SAIC, he leads cross-functional teams in developing cloud-native data platforms and cutting-edge Retrieval Augmented Generation (RAG) solutions. Dr. Pullen holds a PhD in Integrated Computing with a focus on Information Quality and has authored numerous peer-reviewed publications and book chapters on data governance, data fusion, and entity resolution. He is also a Certified Chief Data Officer (CDO, Spring 2025) and a U.S. Air Force veteran.

v. Eric Nelson, Ph.D. – Computer & Data Science Subject Matter Expert

A seasoned professional with 20 years of experience in Data, Data Quality, and Data Engineering. Skilled software developer proficient in Java, Python, and SQL, with a comprehensive background in software development, structural design, data architecture, and data quality analysis. Proven expertise in delivering high-quality data solutions, ensuring data integrity, and facilitating optimal business opportunities and revenue growth through integrated database and software applications. Demonstrated ability to lead and mentor teams, implement best practices, and drive successful project outcomes.

vi. Gretchen Johns, Ph.D. – Organizational Behavior Subject Matter Expert

Results-oriented leader with 23+ years of experience guiding enterprise-wide transformation in complex, matrixed environments. Proven success in leading strategic initiatives at scale, developing high-performing teams, building strategic partnerships, and designing programs that elevate workforce capabilities and align with enterprise goals, government and private sector organizations. Disabled U.S. Army Veteran with a PhD in Industrial & Organizational Psychology and deep expertise in data governance, resource optimization, and human capital strategy. A dynamic communicator and trusted advisor to executive stakeholders.

vii. Shweta Mulcare, D.Eng. - Computer Engineering & Science Subject Matter Expert

Nationally recognized transportation expert with 15+ years advancing aviation safety and efficiency through data-driven innovation, predictive analytics, and multi-modal safety systems. Proven ability to investigate complex aviation incidents, develop actionable recommendations, and build consensus among diverse stakeholders including federal agencies, industry, and international partners. Deep technical expertise in safety management systems (SMS) and emerging technologies including AI/ML applications in transportation safety. Lead cross-functional teams to deliver measurable improvements in aviation safety and operational efficiency.

Please refer to the Appendix for detailed resumes.

8. References

We provide four references from past government or public-sector engagements, including contact information:

Organization	Contact Person, Title	Email	Phone Number
London Stock Exchange Group	Diane Schmidt, Chief Data Officer / James Thornton, Head of Data Ops	DSchmidt1@lseg.com / JThornton@lseg.com	NA
CitiGroup	Courtney Trent, SVP	courtney.trent@citi.com	NA
Municipal Securities Rulemaking Board	John Toye, Chief Information Officer	jtoye@msrb.org	NA
Internal Revenue Service	Melanie Krause, Former Acting Commissioner, Former COO, Former CDO	Melanie.R.Krause@irs.gov	NA

9. Respondent's W-9

Form **W-9**
(Rev. March 2024)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

Go to *www.irs.gov/FormW9* for instructions and the latest information.

Give form to the requester. Do not send to the IRS.

Before you begin. For guidance related to the purpose of Form W-9, see *Purpose of Form*, below.

Print or type. See *Specific Instructions* on page 3.

1 Name of entity/individual. An entry is required. (For a sole proprietor or disregarded entity, enter the owner's name on line 1, and enter the business/disregarded entity's name on line 2.)

Noetic Partners Inc.

2 Business name/disregarded entity name, if different from above.

3a Check the appropriate box for federal tax classification of the entity/individual whose name is entered on line 1. Check only one of the following seven boxes.

☐ Individual/sole proprietor ☑ C corporation ☐ S corporation ☐ Partnership ☐ Trust/estate

☐ LLC. Enter the tax classification (C = C corporation, S = S corporation, P = Partnership) . . . . .

Note: Check the "LLC" box above and, in the entry space, enter the appropriate code (C, S, or P) for the tax classification of the LLC, unless it is a disregarded entity. A disregarded entity should instead check the appropriate box for the tax classification of its owner.

☐ Other (see instructions)

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any)

Exemption from Foreign Account Tax Compliance Act (FATCA) reporting code (if any)

(Applies to accounts maintained outside the United States.)

3b If on line 3a you checked "Partnership" or "Trust/estate," or checked "LLC" and entered "P" as its tax classification, and you are providing this form to a partnership, trust, or estate in which you have an ownership interest, check this box if you have any foreign partners, owners, or beneficiaries. See instructions . . . . . ☐

5 Address (number, street, and apt. or suite no.). See instructions.

9907 Georgetown Pike

Requester's name and address (optional)

6 City, state, and ZIP code

Great Falls, VA 22066

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. See also *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number

			–			–				

or

Employer identification number

2	7	–	1	7	1	1	3	3	2

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and, generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here Signature of U.S. person Date 8/25/2025

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9*.

What's New

Line 3a has been modified to clarify how a disregarded entity completes this line. An LLC that is a disregarded entity should check the appropriate box for the tax classification of its owner. Otherwise, it should check the "LLC" box and enter its appropriate tax classification.

New line 3b has been added to this form. A flow-through entity is required to complete this line to indicate that it has direct or indirect foreign partners, owners, or beneficiaries when it provides the Form W-9 to another flow-through entity in which it has an ownership interest. This change is intended to provide a flow-through entity with information regarding the status of its indirect foreign partners, owners, or beneficiaries, so that it can satisfy any applicable reporting requirements. For example, a partnership that has any indirect foreign partners may be required to complete Schedules K-2 and K-3. See the Partnership Instructions for Schedules K-2 and K-3 (Form 1065).

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS is giving you this form because they

Cat. No. 10231X Form **W-9** (Rev. 3-2024)

10.Authorized Application Signature and Acceptance Form (Attachment B)

Massachusetts Technology Collaborative RFP No. 2026-JAII-01

Attachment B

Massachusetts Technology Collaborative
Authorized Respondent's Signature and Acceptance Form

The undersigned is a duly authorized representative of the Respondent listed below. The Respondent has read and understands the RFP requirements. The Respondent acknowledges that all of the terms and conditions of the RFP are mandatory, and that Respondent's response is compliant with such requirements.

The Respondent understands that, if selected by the Mass Tech Collaborative, the Respondent and the Mass Tech Collaborative will execute an Agreement specifying the mutual requirements of participation.

Respondent agrees that the entire bid response will remain valid for sixty (60) days from receipt by the Mass Tech Collaborative.

I certify that Respondent is in compliance with all corporate filing requirements and State tax laws.

I certify that the statements made in this response to the RFP, including all attachments and exhibits, are true and correct to the best of my knowledge.

I acknowledge and understand the procedures for handling confidential materials submitted to the Mass Tech Collaborative as set forth in Section 3.1(d); I agree to be bound by those procedures and agree that the Mass Tech Collaborative shall not be liable under any circumstances for the disclosure of any materials submitted to the Mass Tech Collaborative pursuant to this RFP or upon the Respondent's selection.

Respondent: _Noetic Partners Inc.
(Printed Name of Respondent)

By: _
(Signature of Authorized Representative)

Name: _Justin Magruder
Title: _Managing Partner
Date: _September 23, 2025

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11.Appendix

11.1. Team Resumes

i. Justin Scott Magruder, Ph.D. – Data Science, Architecture Subject Matter Expert

Justin Scott Magruder, Ph.D.

Professional Summary

Accomplished AI, IT and data strategist with a distinguished 25-year career pioneering **master data management (MDM)**, **data curation**, and **AI-driven solutions** for global financial and high-tech institutions, government agencies, and Fortune 500 companies. Bringing a proven track record of transforming chaotic data ecosystems into agile, value-driven assets. Demonstrable expertise in curating high-quality datasets for machine learning (ML), large language models (LLMs), and AI platforms, delivering measurable improvements in performance, risk management, and decision-making.

Beginning with Investment Banking in the 1990s, I have built foundational data platforms and championed data governance to enable scalable, secure, and compliant data operations. I have consistently applied this expertise to technical due diligence for AI integrations and have led cross-functional teams to implement **Agile DataOps, Data Fabric** and **Data Mesh** frameworks, ensuring data is not just collected but is truly **AI-ready**.

Recent AI-Focused Projects and Achievements

- **LLM-Based Resume Matching and Team Selection (2024):** Curated a database of over 10,000 resumes and developed an AI process using an open-source resume LLM model to match candidates to contract requirements. Automated contract ingestion into the LLM for semantic search and ranking, enhancing talent acquisition efficiency and fit accuracy by 35% through MDM curation of structured resume data.
- **Contract Performance Management and Attribution Analytics (2024):** Designed and curated datasets including proposals, contracts, invoices, and customer feedback (CPARS) for performance measurement initiatives. Applied AI attribution models to analyze win rates and correlate outcomes to contract features, enabling predictive performance tracking in a DataOps framework.
- **AI-Ready Cloud Native Data Platform Development (2021-2024):** Led the design and implementation of a GovCloud-based, AI-ready Cloud Native Data Platform using Databricks, Databricks Mosaic, Airflow, and Kubernetes. Enabled seamless data ingestion, transformation, and curation for AI/ML workflows, supporting Agile DataOps principles to automate end-to-end pipelines and ensure data quality, security, and compliance. Integrated Data Fabric for centralized governance and Data Mesh for domain-specific ownership, reducing time-to-insight by 40%.
- **Technical Due Diligence for AI-Integrated Solutions (2021-2022):** Conducted due diligence on Koverse (Apache Accumulo) as a storage layer for the Tenjin AI

Great Falls, VA | (212) 879-1161

justin@magruder.net | justin.magruder@noeticpartners.com | linkedin.com/in/justinmagruder

Justin Scott Magruder, Ph.D.

platform, incorporating Dataiku and ChatGPT 4.0. Focused on MDM standards to ensure secure, scalable data access and governance for vertically integrated AI workflows.

- **Graph-Based Data Curation for Financial Markets Index Processing (2018-2020):** Developed a Spark-based MPP and graph-based data curation solution in AWS to cleanse and match data from over 500 sources for FTSE Russell Yieldbook index processing. Created knowledge graphs to identify active nodes and deprecate errors, laying foundational MDM for AI analytics and improving data accuracy.
- **Data Curation for Geographic Risk Analytics (2007-2009, Freddie Mac):** Developed enterprise MDM and reference data services (e.g., Borrower, Counterparty, Instrument) for advanced analytics by leveraging disparate datasets from many internal and external sources including NOAA and USPS. This work enabled the company's first ad hoc analytics framework for financial risk management.
- **Global MDM for STP Processing (1997-2000, J.P. Morgan):** As Program Manager, led the development of the bank's first global enterprise reference data services, including the **first-of-its-kind** global instrument master system (RDS-I) and counterparty account setup system (CASS II). These platforms were the foundational architecture for enterprise Straight-Through Processing (STP), and their data models were critical for enabling early, automated risk management and analytics capabilities.

Professional Experience

Noetic Partners, Inc. *CEO, Managing Partner, Founder (2009 – Present)*

- Founded and led a data architecture firm specializing in MDM and AI curation for global financial institutions, including bulge bracket banks, exchanges and regulatory agencies.
- Designed AI-ready data models for counterparty risk and developed enterprise data strategies incorporating Data Mesh/Data Fabric for clients like Citigroup and CitiMortgage, the London Stock Exchange Group (LSEG), the New York Stock Exchange Group, and the Vanguard Group.
- Led MDM and data integration for index/market data products, curating canonical models from 120+ systems to support AI-driven insights for the London Stock Exchange Group & Refinitiv, implemented ISO 8000 controls for SEDOL and LEI

Great Falls, VA | (212) 879-1161

justin@magruder.net | justin.magruder@noeticpartners.com | linkedin.com/in/justinmagruder

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enhancement improving quality for SEDOL products, and developed Group Data Policy and MDM strategies.

- Advised LSEG executive management on acquisition and integration of Refinitiv, Russell Investments and several other strategic firms.
- Assessed and developed the Data Strategy for Financial Advisor Services, curating data for AI quality improvement programs to boost net AUM via predictive analytics.
- Pioneered active data governance and Agile DataOps frameworks with AI monitors for financial transaction processors. Served as Acting CDO for multiple clients, setting up Data programs and implementing Agile DataOps to unlock data value.

Science Applications International Corporation (SAIC) *Partner, Chief Data Officer, Data Strategist (2020 – 2025)*

- Established and led the new Data & AI Mission Advisory Services practice, advising federal and state clients on AI architectures, MDM curation, and DataOps strategies.
- Drove Agile DataOps adoption, integrating Data Mesh and Data Fabric to enable AI/ML in IL4-6 environments. Authored SAIC's first and thereafter annual Corporate Data Strategy, successfully making the case for developing the AI-ready cloud-native Data Lakehouse, the myData Catalog for metadata curation, and the FinOps processor for multi-cloud AI workloads including the US Treasury.
- Led technical due diligence for the acquisition of Koverse, the storage-layer ABAC system at the heart of SAIC's Tenjin AI platform.
- Managed a 75-person team with a $10M+ OPEX and $3M CAPEX budget for AI-ready data systems.

Freddie Mac *Vice President, Chief Data Officer (2007 – 2009)*

- Organized and led the restructuring of enterprise data management.
- Implemented Reference Data Services for borrower, counterparty, and securities data, and developed a multi-year Data Quality benchmark.
- Developed the first internal, financial risk management framework for ad hoc analytics by leveraging disparate datasets from NOAA and USPS.

HP – Knightsbridge Solutions *Senior Principal / Master Data Architect & Data Strategist (2006 – 2007)*

Great Falls, VA | (212) 879-1161

justin@magruder.net | justin.magruder@noeticpartners.com | linkedin.com/in/justinmagruder

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- Defined and developed the product and services strategy for the capital markets practice.
- Led MDM redesigns for AI integrations at UBS and J.P. Morgan, including securities masters and counterparty risk programs.

Scudder Investments / Deutsche Bank *Director, IT & Data Strategy (2001 – 2005)*

- Led the program to design, evaluate, and manage analytics and market data products for the Investment Management Group.
- Curated market data for AI analytics from sources like Bloomberg and FactSet, resulting in over $25M in annual savings.
- Designed and delivered risk management derivatives-exposure and counterparty credit-quality reports.

Merrill Lynch, *MLX Director (2000-2001)*

- Led the application development team responsible for design, development and deployment of about 40 trading and research systems for the Merrill Lynch Exchange (MLX) Institutional Portal.

J.P. Morgan Securities Inc.

Credit Markets Program Manager, LabMorgan (1999 – 2000)

- Formed and led the development team for "Credit Utopia" in the LabMorgan technology incubator, a fully-integrated global credit issuance, trading and risk management platform.

Global Reference Data Services Program Manager (1997 – 1999)

- Program Manager for global Enterprise Reference Data Services for counterparty and instrument setup, management and distribution.
- Managed design, development, and delivery of foundational global systems for STP processing (CASS II and RDS-I).

Education

- **Ph.D., Computing & Information Science**, University of Arkansas Little Rock

Great Falls, VA | (212) 879-1161

justin@magruder.net | justin.magruder@noeticpartners.com | linkedin.com/in/justinmagruder

Justin Scott Magruder, Ph.D.

- *Dissertation:* A Standard Natural Identifier and Data Model to Improve Counterparty Risk Management in Financial Markets and Electronic Commerce (AI/ML-focused data modeling).

- **M.B.A., Finance**, Columbia University Graduate School of Business
- **B.A., Political Science, Mathematics, Studio Art**, Colorado College

Certifications & Appointments

- Working Group Member, US Open Government Forum (2024 – Present)
- Certified ISO 8000 Master Data Quality Manager (2016)
- Board Member & Chair, Banking, Finance & Insurance Committee, Electronic Commerce Code Management Association (2013-2025)
- Member, Technical Committee 184 - Automation Systems & Integration, and Co-author ISO 8000-115/116, ISO 25500 (2015 – Present)
- Member, Joint Working Group 21, AI & Automation, ISO US Technical Advisory Group (2017 – Present)
- ISO TC 184 Liaison to TC 68, Financial Services (2017 – Present)
- Certified Financial Information Analyst, Software & Information Industry Association, (2010)
- Founding Member, International Society of Chief Data Officers (2014-Present)
- Founding Member, Enterprise Data Management Council (2007-Present)
- Co-Author, ISO 8000-115/116, ISO 25500 (2015-Present)
- ISO TC 184 Liaison to TC 68, Financial Services (2017-Present)

Publications and Speaking Engagements (AI & Data Curation Focus)

- "From Chaos to Clarity — A Robust Management Framework for Establishing Agile DataOps," CDO Magazine (2024).
- Finalist, Financial Data Transparency Act PitchFest, Data Foundation (2023)
- "A Standard Natural Identifier and Data Model to Improve Counterparty and Operational Risk Management," Ph.D. Dissertation & Presentation, University of Arkansas Little Rock (2021)

Great Falls, VA | (212) 879-1161

justin@magruder.net | justin.magruder@noeticpartners.com | linkedin.com/in/justinmagruder

Justin Scott Magruder, Ph.D.

- "Positive Data Control," Research Paper & Presentation at MIT CDOIQ (2021).
- Panelist: "Data: The Fuel for AI," AI and Advanced Analytics Summit (2021).
- Numerous speaking engagements and publications from 2006 to the present on topics including MDM, data quality, data governance, and their application to advanced analytics and AI.

Great Falls, VA | (212) 879-1161

justin@magruder.net | justin.magruder@noeticpartners.com | linkedin.com/in/justinmagruder

ii. Richard Y. Wang, Ph.D. – Information Quality and Chief Data Officer Subject Matter Expert

Dr. Richard Y. Wang
E-mail: rwang@mit.edu

Professional Summary

Internationally recognized leader in data quality, data governance, and Chief Data Officer (CDO) practices. Founder of the Institute for Chief Data Officers and pioneer of the 'Journey to Data Quality' framework. Over 25 years of experience advising U.S. Federal agencies, Fortune 500 companies, and global institutions on data-driven strategy, enterprise governance, and organizational transformation. Widely published scholar, educator, and keynote speaker with a strong record of advancing data literacy and CDO leadership worldwide.

Professional Experience

Institute for Chief Data Officers (ICDO)
Founder & Executive Director | 2015 – Present

- Established the world's first institute dedicated to Chief Data Officers, providing executive education, leadership frameworks, and strategic advisory services.
- Designed and delivered training programs for CDOs in U.S. Federal agencies, including the Department of Defense, Army, and Homeland Security, and for major corporations worldwide.

University of Arkansas / MIT
Professor & Research Director | 2005 – Present

- Served as Research Director of the MIT Information Quality (IQ) Program and co-founded the International Conference on Information Quality (ICIQ).
- Taught graduate-level courses in information quality, data governance, and enterprise data management.
- Published foundational works including 'Journey to Data Quality' and established the ACM Journal of Data & Information Quality.

U.S. Army
Chief Data Officer / Chief Quality Officer Advisor | 2018 – 2021

- Supported the U.S. Army's first Chief Data Officer, advising on enterprise data strategy, governance, and modernization.
- Developed frameworks to integrate data quality, governance, and literacy into Army operations.

Cambridge Research Group
Founder & President | 1985 – 1990

- Built a pioneering software firm recognized in Inc. 500's fastest-growing private companies.
- Developed innovative information systems that advanced data management practices in government and industry.

Advisory & Consulting Engagements
Advisor | 2000 – Present

- Served as advisor to Federal Railroad Administration (FRA), Environmental Protection Agency (EPA), and World Bank on enterprise data quality and governance initiatives.
- Guided global enterprises in implementing data governance frameworks, advancing maturity models, and aligning data strategy with organizational goals.

Education

Ph.D. – Massachusetts Institute of Technology (MIT), Sloan School of Management
MBA – University of Wisconsin
BS – National Taiwan University

Honors & Awards (Selected)

- Army CDO/CQO Recognition for advancing enterprise data management (2019)
- DAMA International Academic Award for Outstanding Achievement (2009)
- Recognized as a pioneer in data quality research and practice by ACM and MIT

Publications & Contributions (Selected)

- 'Journey to Data Quality' (MIT Press) – Landmark text on data quality frameworks
- Founding Editor, ACM Journal of Data & Information Quality
- Co-Founder, International Conference on Information Quality (ICIQ)
- Published over 200 academic and professional papers on data management, quality, and governance

Professional Leadership & Skills

- Leadership: Founder of Institute for Chief Data Officers; co-founder of MIT IQ Program & ICIQ
- Expertise: Data Governance, Chief Data Officer leadership, Data Quality, Enterprise Information Management
- Skills: Executive education, stakeholder engagement, organizational transformation, curriculum design

iii. John Randolph Talburt, Ph.D. – Applied Mathematics, Computer & Data Science Subject Matter Expert

John R. Talburt

Professor of Information Science and Acxiom Chair of Information Quality, University of Arkansas at Little Rock, and Lead Consultant for Data Governance at Noetic Partners
Little Rock, Arkansas, United States

Contact

www.linkedin.com/in/johntalburt (LinkedIn)
ualr.edu/eriq (Other)
ualr.edu/informationquality (Other)

Top Skills

Data Quality
Data Analysis
Data Management

Certifications

Information Quality Certified Professional (IQCP)
Certified Data Management Professional (CDMP)
ISO 8000-110:2009 Master Data Quality Manager

Honors-Awards

2014 Distinguished Member Award
2014 Faculty Excellence Award for Research
2008 Academic Award
Recognition for Leadership
Outstanding Contribution in Establishing the First Graduate Degree Program in Information Quality

Publications

Information Quality and Governance for Business Intelligence
Information quality research challenge: Predicting and quantifying the impact of social issues on information quality
Methods And Models To Support Consistent Representation Of Information Product Maps
Entity Information Life Cycle for Big Data: Master Data Management and Information Integration

Summary

Experienced Graduate Program Coordinator with a demonstrated history of working in the higher education industry. Skilled in Business Process, Analytical Skills, Oracle Database, Databases, and IT Strategy. Strong quality assurance professional with a PhD focused in Mathematics from University of Arkansas at Fayetteville.

Experience

University of Arkansas at Little Rock
20 years

Coordinator for the Information Quality Graduate Program
August 2006 - Present (19 years 2 months)

Faculty Research Associate, Institute for Chief Data Officers
June 2017 - Present (8 years 4 months)

Acxiom Chair of Information Quality
2005 - Present (20 years)
Little Rock, Arkansas Area

Coordinator for the UALR Information Quality Graduate Program
Executive Director of the UALR Research Center for Entity Resolution and Information Quality (ERIQ)

Noetic Partners
Lead Consultant for Data Governance, Data Quality, and Data Strategy
December 2018 - Present (6 years 10 months)
New York City Metropolitan Area

Black Oak Analytics
Chief Scientist
January 2009 - April 2017 (8 years 4 months)
Little Rock, Arkansas Area

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Information Quality Assessment and Improvement of Student Information in the University Environment

Patents

Method and system for the creation, enhancement, and update of remote data using persistent keys

Data linking system and method using encoded links

A System for Collecting, Ranking and Managing Entity Identity Information from Social Media

Data linking system and method using tokens

Acxiom Corporation
Business Unit Leader
1995 - 2005 (10 years)

Education

University of Arkansas at Fayetteville
PhD, Mathematics · (1967 - 1971)

iv. Daniel Lee Pullen, Ph.D. – Computer & Data Science Subject Matter Expert

Daniel Pullen, PhD
Phone: (501) 993-4908 | **Email**: daniel.pullen@gmail.com | **LinkedIn**: https://www.linkedin.com/in/daniellpullen
Address: 4124 Montgomery Rd Little Rock, AR 72223

EXPERIENCE

Chief Data Scientist and Data Architect – SAIC **February 2021 – Current**

- Lead the Data Science and Data Architecture Team in SAIC's AI Transformation Initiative
- Principle Contributor to the design and architecture of Retrieval Augmented Generation (RAG) use cases for the Enterprise
- Evaluated Tools and Platforms for Creation of Enterprise Data Science and Analytics Program
- Lead the Design, Architecture, and Implementation of SAIC's Cloud Native Data Platform
- Managed the Enterprise Data Science and Data Architecture teams reporting to the Chief Data Officer (CDO)
- Coordinated with the Data Governance Team to Capture and Define Business Requirements
- Lead the Design and Strategy of the Enterprise's Master Data Management Program
- Product Owner for SAIC Enterprise Entity Resolution (SEER) Entity Resolution Tooling

Partner, Data Science – Noetic Partners **April 2020 – Current**

- Created data strategies for clients to improve management processes and increase value extracted from data
- Developed, implemented, documented and managed data governance change management program for clients
- Created data governance standards for clients in support of enterprise data governance
- Managed Noetic resources and collaborated with clients to ensure timely completion of milestone deliverables
- Developed Data Governance training program to improve client's organizational awareness of DG principles

Lead Data Scientist, Architect – Black Oak Analytics Inc. **August 2012 – March 2020**

- Gathered/Documented client requirements and proposed solutions to improve client data strategies
- Configured and managed cloud-based solutions using Amazon Web Services (AWS)
- Designed and implemented big data/distributed high-performance Entity Resolution systems and associated data science tools and methodologies
- Designed and developed big data/distributed data science tools and methodologies for Entity Resolution systems
- Led quality analysis and improvement initiatives for Client Entity Resolution Systems

Assistantship – University of Arkansas at Little Rock **May 2011 – August 2016**

- Performed Entity Resolution and rule analysis using Open System Entity Resolution on student enrollment data
- Taught lab sessions for Entity Resolution, IQ Principles and IQ Tools courses covering topics including hands on Entity Resolution, Information Quality Assessment, and Data Science and Analytics labs

Transmissions Systems Journeyman – U.S. Air Force **April 2007 – July 2010**

EDUCATION

Community College of the Air Force **April 2007 – July 2010**
Associate of Applied Science in Electronic Systems (Spring 2010)

University of Arkansas at Little Rock **August 2010 – May 2017**
Bachelor of Science in Information Science (Spring 2012)
Graduate Certificate in Information Quality (Spring 2013)
Master of Science in Information Quality (Fall 2014)
Doctor of Philosophy in Integrated Computing: IQ Track (Spring 2017)

PROFESSIONAL SKILLS

Leadership & Cross-Functional Collaboration:
Proven ability to lead and collaborate across diverse teams, driving successful organizational outcomes through effective management and coordination.

Crafted actionable roadmaps and implementation strategies that translate business objectives into executable technical plans. Built consensus across diverse functions, deftly navigating organizational politics and removing blockers to keep initiatives moving forward. Directed Scrum and Kanban-based teams, steering sprints from planning through retrospective to deliver high-impact solutions on time and within scope.

Professional and Academic Communication:
Experienced presenter across academic, professional, and conference settings, with a strong ability to communicate complex technical topics to both expert and non-technical audiences.

Regularly briefed leadership, translated research insights into business-relevant terms, developed content/led lab sessions for graduate class, published in conferences, a journal, and coauthored two book chapters

TECHNICAL SKILLS

Programming & Scripting: Java, Python, SQL, HiveQL, C++, Bash

Cloud Technologies: Azure, Amazon Web Services, Databricks, EMR, Spark

AI/ML Tools: SKLearn, Pandas, Numpy, NLTK, spaCy, Langchain, Llama.cpp, MLFlow, PGVector

Concepts/Methodologies: Master Data Management, Metadata Management, Entity Resolution, Data Architecture, Data Warehousing, Data Lake/Lakehouse

CERTIFICATIONS

CDOCert.org - Certified Chief Data Officer (Spring 2025)

AWARDS

U.S. Air Force

+ Tinker AFB Airman of the Year Award (2009), Distinguished Graduate of Electronic Principles Course

University of Arkansas at Little Rock

+ Outstanding Junior for B.S. in Information Science (2011)
+ Outstanding Research Award for B.S. in Information Science (2012)
+ First Place in Engineering and Technology at the UALR Research Expo (2013)
+ Outstanding Academic Achievement for M.S. in Information Quality (2014)
+ Outstanding Achievement in Research for M.S. in Information Quality (2014)
+ Outstanding Doctoral Student Integrated Computing: IQ Track (2017)
+ Outstanding Alumni Award in Information Quality (2018)

PUBLICATIONS

Information Knowledge Engineering 2012 (Conference)

+ "Developing and Refining Matching Rules for Entity Resolution"

Information Knowledge Engineering 2013 (Conference)

+ "Mitigating Data Quality Impairment on Entity Resolution Errors in Student Enrollment Data"
+ "Evaluation of Entity Resolution Results through Benchmarking and Truth set Development"

International Conference on Information Quality 2013 (Conference)

+ "Perception of Value-Added Through a Visual Join Operation"
+ "A False Positive Review Indicator for Entity Resolution Systems Using Boolean Rules"

Information Technology: New Generations 2014 (Conference)

+ "Probabilistic Matching Compared to Deterministic Matching for Student Enrollment Records"

International Conference on Information Quality 2014 (Conference)

+ "Iterative Approach to Weight Calculation in Probabilistic Entity Resolution"

Information Knowledge Engineering 2015 (Conference)

+ "Applying Phonetic Hash Functions to Improve Record Linking in Student Enrollment Data"

International Conference on Data Mining Workshop 2015 (Conference)

+ "Methodology for Large-Scale Entity Resolution without Pairwise Matching"

International Conference on Information Technology 2016 (Conference)

+ "A Method for Match Key Blocking in Probabilistic Matching"

International Journal of Organizational and Collective Intelligence 2016 (Journal)

+ "A Case Study on Data Quality, Privacy, and Evaluating the Outcome of Entity Resolution Processes"

International Conference on Information Quality 2017 (Conference)

+ "The Challenges of, and Why You Should Reconsider Using, Truth Sets for Optimizing Entity Resolution"

Doctoral Dissertation 2017 (Thesis)

+ "A System for Stratified Sampling of Entity Resolution Results to Assess and Improve Accuracy with Minimal Clerical Review Effort"

Analytic Methods in Systems and Software Testing (Book Chapter)

+ "An Automated Regression Testing Framework for a Hadoop-based Entity Resolution System"

Information Quality in Information Fusion and Decision Making (Book Chapter)

+ "Evaluating and Improving Data Fusion Accuracy"

v. Eric Nelson, Ph.D. – Computer & Data Science Subject Matter Expert

Eric D. Nelson
501-920-6649 | eric.nelson@saic.com | LinkedIn
Vilonia, AR

Professional Summary
A seasoned professional with 20 years of experience in Data, Data Quality, and Data Engineering. Skilled software developer proficient in Java, Python, and SQL, with a comprehensive background in software development, structural design, data architecture, and data quality analysis. Proven expertise in delivering high-quality data solutions, ensuring data integrity, and facilitating optimal business opportunities and revenue growth through integrated database and software applications. Demonstrated ability to lead and mentor teams, implement best practices, and drive successful project outcomes.

Professional Experience

Science Applications International Corporation - Reston, VA
Metrics and Data Sr Principal
Sept 2021 - Present

- Developed and maintained data models for data integration efforts.
- Supported data cleaning and transformation prior to data persistence; wrote scripts for data analysis.
- Interpreted operational requirements, performed data modeling, and integrated data from various sources to implement data pipelines for near-real-time ingest.
- Enforced data modeling best practices and version control of software and configuration across development, integration, and production environments.

Blue Arrow Horizons - Conway, AR
Senior Partner / Chief Executive Officer
May 2014 - Dec 2023

- Managed and oversaw all business development, growth, and profitability of the consulting firm.
- Collaborated with CFO and CTO to provide proactive, decisive, and hands-on leadership, establishing high-priority strategic initiatives.
- Recognized for technical and business acumen, contributing to groundbreaking product development, analytics, and thought leadership.

Acxiom Corporation - Conway, AR
Consultant
2009 - Sept 2021

- Advised clients on technologies and capabilities in the marketspace to solve client needs with measurable improvements.
- Provided strategic or technology consultation, leveraging expertise in Data Quality.
- Designed and customized software deliverables, managed software development life cycle, and constructed software systems and applications.
- Participated in research, defined value propositions, and presented compelling business-improvement recommendations.

Programmer
2002 - 2009

- Developed, maintained, and supported application programs using Java and related tools.
- Led programming tasks, including enhancements, maintenance, and support for clients' applications and interfaces.
- Trained and mentored junior programmers in programming methodologies and best practices.
- Delivered back-office tools and developed proof of concept prototypes.

Education

University of Arkansas at Little Rock, Little Rock, AR

- Ph.D. in Integrated Computing, December 2011
- MS in Information Quality, December 2007
- MS in Computer Science, December 2007
- BS in Computer Science, December 2002

Skills

- **Programming Languages:** Java, Python, SQL, Linux shell scripting
- **Data Tools:** Airflow, dbt, Avro, JSON, XML
- **Database Technologies:** Oracle, Postgres, MySQL, HBase, Accumulo, MongoDB, Neo4J
- **Cloud Platforms:** Azure, AWS
- **Data Modeling:** Physical (schemas), Logical (UML)
- **Software Development:** Source code management tools (GitHub, GitLab, BitBucket), technical documentation
- **Data Security:** Encryption, pedigree, provenance

Publications and Presentations

- Nelson, E. (2011). "Design and Construction of an Entity Resolution System that Supports Entity Identity Information Management and Asserted Resolution". University of Arkansas, Little Rock, AR: ProQuest.
- Nelson, E., & Talburt, J. (2011). "Entity Resolution for Longitudinal Studies in Education using OYSTER". Proceedings: 2011 Information and Knowledge Engineering Conference (IKE 2011), Las Vegas, NV, July 18-20, 2011 (pp. 286-290).
- Zhou, Y., Talburt, J., & Nelson, E. (2011). "The Interaction of Data, Data Structures, and Software in Entity Resolution Systems". Software Quality Professional: http://asq.org/pub/sqp/ Volume 13 Issue 4.
- Talburt, J., & Nelson, E. (2009). "CoDoSA: A light-weight, XML framework for integrating unstructured textual information." 15th Americas Conference on Information Systems, San Francisco, CA: AIS Electronic Library. Paper 489.
- Kobayashi, F., Nelson, E.D., & Talburt, J.R. "Design Consideration for Identity Resolution in Batch and Interactive Architectures". 16th International Conference on Information Quality (Accepted for publication).

vi. Gretchen Johns, Ph.D. – Organizational Behavior Subject Matter Expert

Dr. Gretchen M. Johns
1389 County Road 78, Pisgah, AL 35765
drgretchenjohns@gmail.com Cell: (254) 630-3750

SUMMARY:
Results-oriented leader with 23+ years of experience guiding enterprise-wide transformation in complex, matrixed environments. Proven success in leading strategic initiatives at scale, developing high-performing teams, building strategic partnerships, and designing programs that elevate workforce capabilities and align with enterprise goals, government and private sector organizations. Disabled U.S. Army Veteran with a PhD in Industrial & Organizational Psychology and deep expertise in data governance, resource optimization, and human capital strategy. A dynamic communicator and trusted advisor to executive stakeholders.

CORE COMPETENCIES:

Cross-Functional Team Leadership	Talent Pipeline & Workforce Optimization
Data Governance & Transformation	Talent Strategy & Succession Planning
Organizational Development & Change Management	Communication & Employee Engagement
Program Development & Scalable Execution	Strategic Growth & Business Development
Client Relationship Management	Organizational Psychology

WORK EXPERIENCE:

Manager, Business Operations & Data Governance
SAIC, Remote, AL – Data Operations Team (2022 – Present)

- **Business Operations:**
  - Managed annual budget planning and monitoring, procurement, and staff coordination across functional areas.
  - Oversaw contract and temporary staff coordination, invoice approval, and strategic supplier relationship.
  - Implemented employee appreciation programs, driving force for coordinating remote employee engagement activities, and advised leadership on various strategic initiatives.
  - Event planner and vendor coordinator for various locations across the country.
- **Communications & Data Literacy:**
  - Streamlined internal communications, reducing meeting frequency by 75% while increasing stakeholder engagement across business units.
  - Responsible for the design, content, and upkeep of the organization's internal SharePoint Online website.
  - Serve as strategic advisor to senior executives on workforce planning, change adoption, and communications strategy.
- **Future Leaders in Data Program Operations:**
  - Architect of the Future Leaders in Data (FLiD) Program, a model initiative that enhanced early career development and boosted intern-to-hire conversion and long-term retention while enhancing the perception of SAIC's innovation in workforce development.
  - Responsible for 15-20 FLiD interns in highly structured summer internship program and year-round work study.
  - Responsible for holistic early career development from intern through early career professionals experiencing the role of project lead of 3-4 interns on strategic data projects.

- Leveraging automation tools created repeatable products to minimize the administrative time required to efficiently manage the program.

Manager, Talent Strategy & Resource Development
SAIC, Remote, AL – Chief Data Office (2021 – 2022)

- **Internship and Early Career Development Manager:**
  - Designed and scaled a comprehensive early-career talent program to support future workforce pipelines, reducing time-to-productivity by 60%.
  - Established a centralized data support team, enhancing service delivery and customer experience for 600+ users.
- **Training and Development Manager:**
  - Initiated certification pathways aligned with business needs (e.g., Power BI) to accelerate technical onboarding and performance.
  - Administered the Meyers-Briggs Type Indicator (MBTI) assessment to the 32 staff members and conducted individual result reviews.
  - Collaborated across departments to align talent initiatives with corporate growth objectives and federal client expectations.

Strategic Resource Manager (2016 - 2021)
SAIC, Remote, AL – Information Technology Office (ITO)

- **Internal Staff:**
  - Managed talent allocation and workforce reporting for a 440+ person organization supporting defense clients.
  - Consulted on organizational resource requirements, including out-of-cycle and organizational realignments, maintain personnel roster and maintain organizational charts for over 440 ITO professionals.
  - Advised leadership on human resource activities.
  - Provided the Chief Information Officer (CIO) and executive staff with routine and ad hoc data analysis reports.
  - Instituted current and historical resource tracking to include labor expense and internal/external organizational movements for executive leadership.
  - Responsible for database conception for consolidation of personnel data, internal and external training completions, certification data, and security clearance data exports from various systems.
  - Advised leadership on a variety of administrative actions.
  - Created and supported the deployment of employee engagement surveys and provide analyzed data to senior leaders.
- **Staff Augmentation:**
  - Responsible for professional services procurement process initiation and liaison between project/program managers and buyers.
  - Coordinated and sponsored external resources to include temporary employees and external intercompany staff augmentation.
  - Tracked burn rate on all professional services purchase orders for consultant support.
  - Responsible for the onboarding of direct, temporary, and intern hires.
- **Training and Development Manager:**
  - Collaborated with department managers and executive leadership to create virtual training paths through Percipio to meet training requirements.

- Reported to the CIO on annual mandatory training, internal and external training, certifications, and yearly training budget spend.
- Developed training program/tracking evolution to support individual and company requirements.
- Responsible for consolidating training and conference attendance requirements to provide cost savings across the organization.
- Leveraged training partnerships to provide ITO over $290k of free Azure certification training.

- **Internship Program Manager:**
  - Created an annual internship program consisting of two distinct cycles, summer and year-round, providing the organization a constant invigoration of new perspectives and the latest in institutional knowledge.
  - Instituted repeatable products, processes, and procedures to implement a formalized internship program averaging 25 annual geographically dispersed interns.
  - Established code of conduct and professional standards across all ITO intern locations in FL, TN, AL, MD, CA, and VA.
  - Responsible for the launch of virtual program experience to include onboarding and initial learning modules.
  - Increased retention and promotion by 40% in three years, maintaining an 80% success rate for two years in a row.
- **Mentorship Programs:**
  - Led the expansion of the on-premises mentorship program to a virtual offering across the company.

Configuration Management Lead/Engineering Support Team Lead (2013 - 2016)
SAIC, Fort Bliss, TX – Network Integration Evaluation (NIE) program

- **Configuration Management Lead:**
  - Accountable for configuration management across two physical and logical vehicle designs programs, incident reporting/trouble tickets, trend analysis, process/procedure development, and configuration management boards.
  - Responsible for the coordination of Engineering Review Boards (ERBs), led Configuration Control Boards (CCBs) and Trend Analysis briefings to senior and executive-level leadership.
  - Instituted repeatable processes and procedures. Instrumental in developing a configuration management program for the Network Integration Exercise at Fort Bliss, TX that rapidly fielded the latest technology to Army Warfighters.
- **Engineering Support Team Lead:**
  - Responsible for a multi-functional team of drafters, cable fabricators, technical writers, analysts, and configuration management personnel directly reporting to the Chief of Engineering.
  - Responsible for contract close-out for team functions.

Configuration Management Lead (2011 - 2013)
Northrop Grumman, Fort Bliss, TX – Network Integration Evaluation (NIE) program

- Led the creation of the configuration management program in support of the Army's Agile Acquisition program. Creation of Standard Operating Processes and Procedures to support the program.
- Responsible for the Technical Design Package (Interconnect Diagrams, Top-Down Designs, Network Diagrams and Bill of Materials (BOM)) delivery every six months.
- Implemented standardization across engineering teams.

- Established incident reporting processes and procedures. Responsible for the evolution of trouble ticket reporting from Excel to a database that eventually was hosted on SharePoint.
- Conception of vehicle packets that are the cornerstone of the build process.
- Responsible for leading Engineering Review Boards, participant in Configuration Control Boards and responsible for completion and delivery of the test Root Cause Analysis.
- Liaison to multiple government agencies and other defense contractors.

Analyst Positions – Future Combat Systems (FCS) program, Fort Hood, TX (2005 - 2011)
ElectroSystems Engineers Inc. (ESEI), , GaN Corporation, QinetiQ North America, Integration Innovation Inc (i3)

- Responsible for ensuring government purchased equipment was accounted for and returned to appropriate organization when the FCS program was cancelled.
- Collaborated on interoperability test threads for new equipment with coordination with the Central Technical Support Facility (CTSF) test floor personnel.
- Established three integration labs in Aberdeen Proving Grounds (APG), White Sands Missile Range (WSMR) and an additional Huntington Beach.
- Configuration management support for over $500K worth of software.
- Accountable for over $1.1M of hardware.
- Led nine-to-ten-member engineer support teams to each lab on multiple occasions from multiple Program Offices and employers.
- Established first integration lab in Huntington Beach, CA in support of interoperability testing.
- Responsible for hardware inventory and software configuration management.
- Coordinated with the Configuration Management department at the Central Technical Support Facility (CTSF) to obtain current software in accordance with the Memorandum of Agreement (MOA) between the Combined Test Organization (CTO) (Aberdeen Proving Grounds) and the CTSF.
- Provided liaison support between the Central Technical Support Facility (CTSF) at Fort Hood, the Future Combat Systems program, and Operational Test Command (OTC) for test support.

Commissioned Officer (2002 - 2005)
US Army, Fort Polk, LA

- Planning and coordination of logistical support of 3800 personnel and responsible for over $200 million of equipment.
- Developed an inventory loss report tracking system to eliminate over 150 backlogged reports resulting in over $800,000 of government property being accounted for in less than 8 months.

EDUCATION:

- **PhD in Industrial and Organizational Psychology,** Keiser University, October 2021
  - Dissertation: A Quantitative Analysis of Resistance to Change and Psychological Capital
- **Master of Science in Management (Project Management Certificate),** Kaplan University, July 2011
- **Bachelor of Arts in Psychology,** Dickinson College, May 2002

CERTIFICATIONS:

- **Data Management Capability Assessment Model (DCAM) Certified (2021)**
- **Presentation Skills Certification (February 2021)**
- **Change Management Professional (CMP) (January 2021)**
- **Meyers-Briggs Type Indicator® (MBTI®) Certified Practitioner (January 2021)**

- **ITIL® v4 Foundation Certified in IT Service Management (December 2020)**
- **Resource Management Certified Professional (RMCP®) (October 2019)**
- **Certified Technology Business Management Executive (CTBME) (November 2017)**

SPEAKING ENGAGEMENTS:

- 2025, 2024, 2023 Cooperative Education & Internship Association (CEIA) Conference
- 2023 Resource Management Global Symposium (RMGS)

vii. Shweta Mulcare, D.Eng. - Computer Engineering & Science Subject Matter Expert

SHWETA MULCARE

shweta.mulcare@gmail.com +1.703.772.9867 http://www.linkedin.com/in/shweta-mulcare/

AEROSPACE & AI EXECUTIVE

Transforming Aviation Through Data-Driven Innovation

Strategic Advisory | Federal Contracting | Advanced Analytics

Nationally recognized transportation expert with 15+ years advancing aviation safety and efficiency through data-driven innovation, predictive analytics, and multi-modal safety systems. Proven ability to investigate complex aviation incidents, develop actionable recommendations, and build consensus among diverse stakeholders including federal agencies, industry, and international partners. Deep technical expertise in safety management systems (SMS) and emerging technologies including AI/ML applications in transportation safety. Lead cross-functional teams to deliver measurable improvements in aviation safety and operational efficiency.

Core Values: Curious | Thoughtful | Bold | Brave

- Aviation Safety & Risk Management
- Federal Agency AI Strategy Development
- Large-Scale Contract Capture ($14B TCV)
- Aviation Training Innovation & Simulation
- Aerospace Data Platform Architecture
- FAA/NASA/DHS/DOT Executive Engagement
- Safety Management Systems (SMS) Implementation
- Predictive Analytics for Aviation Safety
- Public-Private Partnership Leadership
- Technical Proposal Development & Win Strategy

PROFESSIONAL EXPERIENCE

Science Applications International Corporation (SAIC), Reston, VA **2022 – 2025**

Managing Director, Data Science Futures | AI & Data Strategist | Chief Innovation Office | Technology Fellow

Spearheaded federal aviation AI initiatives and secured major contract wins across civilian agencies. Created innovative solutions for critical aviation workforce challenges.

Federal Contract Excellence & Aviation Innovation

- Captured $14B in total contract value with 85% win rate on federal opportunities (10-year IDIQs).
- Pioneered AI-powered aviation training solution addressing critical air traffic controller shortage, securing innovation funding in $55B market projected to reach $155B by 2032.
- Architected AI transformation roadmaps for NASA, DOT, DHS, and VA, directly supporting agency modernization goals.
- Influenced DHS Border of the Future initiatives and served as trusted advisor to senior VA executives.
- Led Technical Readiness Assessments for federal digital transformation programs.

Aviation Data Platform Development

- Improved data science at scale across 10 NASA centers by launching NASA's first multi-tenant Enterprise Data Platform.
  - Reduced costs by implementing OpEx-based pricing models, eliminating CapEx expenses for tenant agencies.
  - Integrated legacy and future NASA systems, optimizing investments and improving platform interoperability.

SHWETA MULCARE http://www.linkedin.com/in/shweta-mulcare/

- Boosted enterprise adoption by aligning the data platform with NASA's IT, Data, and Digital Transformation strategies.

Strategic Partnerships & Federal Engagement

- Established SAIC - The George Washington University AI partnership, advancing responsible AI with 100+ researchers.
- Represented SAIC at national aerospace forums, strengthening federal agency relationships.

The MITRE Corporation, McLean, VA **2010–2022**

Outcome Lead, AI & Advanced Analytics Evolution & Stakeholder Engagement **2020–2022**

Drove AI-powered aviation safety innovation. Built new strategic partnerships. Secured multi-million-dollar funding for next-generation aviation analytics.

- Secured $2M in IRAD funding for predictive aviation safety analytics and synthetic data generation.
- Established $7M+ aerospace medicine program within two years, spanning 3 R&D centers.
- Developed strategic partnerships with NASA Ames and Airbus Americas for safety innovation.
- Won 2021 IEEE/AIAA Best of Track Paper for human-machine teaming in aviation systems.
- Advised MITRE aviation IRAD investment committee, shaping strategic R&D priorities.
- Developed dashboard for safety issue tracking: intake, prioritize, analyze, share, track

Lead, Aviation Safety Information Sharing and Analysis (ASIAS) **2019–2020**

Led ASIAS Public-Private Partnership, managing safety data from 99% of U.S. commercial aviation operations

- 10X'd ASIAS AI/ML portfolio in 2 years.
- Reduced analysis timeline from 2 weeks to 1 day through process innovation.
- Strengthened FAA-industry collaboration through ASIAS executive board engagement.
- Shared U.S. safety best practices with European Aviation Safety Agency (EASA) Data4Safety program.
- Directed cross-functional teams analyzing millions of flights annually to identify emerging risks
- Established "aviation safety idea factory" driving gritty innovation in safety solutions

Co-Department Head, Aviation Safety Analysis and ASIAS **2018–2019**

Led $40M P&L and 75+ person team delivering aviation safety analytics to FAA.

- Led Boeing 737 MAX accident analysis for FAA Administrator with daily executive updates.
- Initiated ASIAS reorganization driving AI/ML adoption and predictive analytics expansion.
- Established data governance framework balancing transparency with proprietary concerns across 40+ airlines
- Coordinated aviation safety studies across 3 divisions and 5 departments
- Established AI/ML working group with 50+ stakeholders from academia, industry, and government

Project Lead Advisor, Aviation Safety Analysis and ASIAS **2017–2018**

Directed integration of MITRE aviation safety analytics under ASIAS, managing 20+ staff years of analysis.

- Led first FAA/Industry Go-Around Study using ASIAS Fusion data.
- Designed FAA Safety Organization (AVS) strategic framework through executive workshops.
- Unified safety initiatives across government and industry stakeholders.

Group Leader, Airspace and Procedures Design and Analysis **2015–2017**

- Developed FAA surface safety analysis, resulting in multi-year Runway Safety Focus Airports Program recognized by Obama Administration DOT.
- Secured $1.25M for NY airspace modernization through multi-agency coordination.
- Developed "single efficiency factor" model to enhance airspace management.

SHWETA MULCARE http://www.linkedin.com/in/shweta-mulcare/

Group Leader, ATC Safety Analysis **2013–2015**

- Expanded FAA work program from 8 to 18 staff years through strategic needs identification.
- Developed 10+ safety monitoring dashboards and KPIs for FAA audits.
- Integrated risk analytics into FAA Top 5 Risk Program.

Senior Aviation Systems Engineer **2010–2013**

- Secured ICAO approval for RVSM airspace safety in Kabul, advancing U.S. AFCENT objectives.
- Won 6 multi-year projects at Dubai International Airport, establishing MITRE in $300B infrastructure market.
- Increased Dubai airport capacity by +4 arrivals/+6 departures per hour through Reduced Runway Separation Minima.

United States Patent and Trademark Office, Alexandria, VA **2008–2010**

Patent Examiner

- Evaluated electrical engineering patent applications for novelty and innovation.
- Promoted from GS-7 to GS-11 in under 2 years based on performance.

National Institutes of Health, Bethesda, MD **2006–2008**

Research Fellow

Conducted critical care medicine and neuroscience research.

- Integrated multiple technologies for bedside clinical diagnostics development.
- Advanced understanding of memory processes and motor skill learning contributing to human learning models.
- Identified neural root cause of a speech deficit with colleagues at Oxford University.

EDUCATION

Doctor of Engineering (DEng), ABD, Engineering Management and Systems Engineering, The George Washington University

Master of Science (MS), Systems Engineering, The George Washington University

Bachelor of Science (BS), Physics, The George Washington University

Science and Technology and Systems Engineering Certification, Defense Acquisition University

PROFESSIONAL RECOGNITION AND THOUGHT LEADERSHIP

- Committee Member the National Academies Committee on Emerging Trends in Aviation Safety, established per the Consolidated Appropriations Act of 2021
- 2021 IEEE/AIAA Best of Track Paper Award for Human-Machine Teaming Safety
- **2024 Fellow**, American Council for Technology and Industry Advisory Council

SHWETA MULCARE http://www.linkedin.com/in/shweta-mulcare/

SELECTED PUBLICATIONS

- "Predicting New Risks: Crew Resource Management in a Human-Machine Team", AIAA Aviation Forum 2022
- "Assuring Human and Artificial Intelligence Systems are Appropriately Informed in Aviation Systems", 40th AIAA/IEEE Digital Avionic Systems Conference. Best of Track Paper Award.
- "Collision Risk Assessment of Dual Arrival Streams Concepts at Dubai International Airport,", October 2014
- "Safety Monitoring and Analysis, Updates to Key Performance Indicators," MITRE Letter, February 2014
- "Assessment of Runway 30R Crossing Alternatives," MITRE Technical Report, June 2013.
- "Pre-implementation Study of Reduced Vertical Separation Minimum for the Kabul Flight Information Region," MITRE Technical Report, May 2011.
- "Dubai International Airport Airside Capacity Optimization Study," MITRE Technical Report, December 2011.
- "Dynamic Reorganization of Striatal Circuits During the Acquisition and Consolidation of a Skill," Nature Neuroscience, 12 (3) (2009) 333 – 341.
- "Impaired Synaptic Plasticity and Motor Learning in Mice with a Point Mutation Implicated in Human Speech Deficits," Current Biology, 18 (5) (2008) 354 – 362.
- "Loss of GluN2B-containing NMDA receptors in CA1 hippocampus and cortex impairs long-term depression, reduces dendritic spine density, and disrupts learning," *Journal of Neuroscience,* 30 (13) (2010) 4590-4600
- "Subregion Specific Striatal Changes During Skill Learning," Presentation at the annual Society for Neuroscience meeting, San Diego, CA

Massachusetts Technology Collaborative

Grant Agreement
Standard Budget and Invoice Template
Invoiced Costs

Line Number	Budgeting																	
2	Applicant Information																	
3	Applicant: NOETIC PARTNERS, INC.			Procurement No.: RFP# 2026-JAII-01														
4	Budget Period:			Title of Proposed Project:														
5	Address: 9907 Georgetown Pike, Great Falls VA 22066 USA			AI Hub Data Commons Collaborative Consulting Services														
6																		
7																		
8				MTC Funding Requested:														
9				Total Project Cost:														
10	Cost Elements			Total Project	Invoice 1		Invoice 2		Invoice 3		Invoice 4		Cumulative					
11					Period: MM/DD/YYYY-MM/DD/YYYY		Period: MM/DD/YYYY-MM/DD/YYYY		Period: MM/DD/YYYY-MM/DD/YYYY		Period: MM/DD/YYYY-MM/DD/YYYY		Period: MM/DD/YYYY-MM/DD/YYYY					
12						Amount		Amount		Amount		Amount	Expended		Remaining			
13	I. Direct Labor																	
14	*name/title*	*HRS*	*Rate*		*HRS*		*HRS*		*HRS*		*HRS*							
15	Justin Scott Magruder, Ph.D.	600	$300	$180,000		$ -		$ -		$ -		$ -	$ -		$ 180,000.00			
16	Richard Wang, Ph.D.	200	$300	$60,000		$ -		$ -		$ -		$ -	$ -		$ 60,000.00			
17	John Randolph Talburt, Ph.D.	200	$300	$60,000		$ -		$ -		$ -		$ -	$ -		$ 60,000.00			
18	Daniel Lee Pullen, Ph.D.	800	$225	$180,000		$ -		$ -		$ -		$ -	$ -		$ 180,000.00			
19	Eric Nelson, Ph.D.	800	$225	$180,000		$ -		$ -		$ -		$ -	$ -		$ 180,000.00			
20	Shweta Mulcare, D.Eng.	850	$200	$170,000		$ -		$ -		$ -		$ -	$ -		$ 170,000.00			
21	Total Direct Labor			$830,000	0	$ -	0	$ -	0	$ -	0	$ -	$ -		$ 830,000.00			
22																		
23	II. Direct Labor Fringe Cost	Rate (%):		$0		$ -		$ -		$ -		$ -	$ -		$ -			
24																		
25	II. Subcontractors/Consultants/Contracted Staffing																	
26	*Firm name/title or role/type of services to be provided*	*HRS*	*Rate*		*HRS*		*HRS*		*HRS*		*HRS*							
27				$0		$ -		$ -		$ -		$ -	$ -		$ -			
28				$0		$ -		$ -		$ -		$ -	$ -		$ -			
29				$0		$ -		$ -		$ -		$ -	$ -		$ -			
30				$0		$ -		$ -		$ -		$ -	$ -		$ -			
31				$0	5	$ -		$ -		$ -		$ -	$ -		$ -			
32				$0		$ -		$ -		$ -		$ -	$ -		$ -			
33	Total Subcontractors/Consultants			$0	5	$ -	0	$ -	0	$ -	0	$ -	$ -		$ -			
34																		
35	III. Direct Materials (provide description and costs basis)																	
36	Curriculum Development & Training			$0									$0		$0			
37	AWS EC2, VPC, IAM and S3 Cloud Services (Noetic will advise for a MA Direct contract)			$0									$0		$0			
38	AWS GLUE, KMS, GuardDuty, WAF, Secrets Manager, Kinesis, DMS (Noetic will advise for a MA Direct co			$0									$0		$0			
39	AWS Other (Noetic will advise for a MA Direct contract)			$0									$0		$0			
40	Databricks Licensing (Noetic will advise for a MA Direct contract)			$0									$0		$0			
41	Splunk Licensing (Noetic will advise for a MA Direct contract)			$0									$0		$0			
42	Other Tools TBA (Noetic will advise for a MA Direct contract)			$0									$0		$0			
43	Total Direct Materials			$0		$0		$0		$0		$0	$0		$0			
44																		
45	IV. Travel			$83,000									$0		$83,000			
46																		
47	V. Other Direct Costs *(list type and description such as venue rental costs and cost basis)*																	
48	NA			$0									$ -		$ -			
49				$0									$ -		$ -			
50				$0									$ -		$ -			
51				$0									$ -		$ -			
52				$0									$ -		$ -			
53	Total Other Direct Costs			$0		$ -		$ -		$ -		$ -	$ -		$ -			
54																		
55	VI. General & Administrative Expense/Overhead	Rate (%):		$0		$ -		$0		$0		$0	$ -		$0			
56																		
57	**Total PROJECT COSTS**			**$913,000**		**$0**		**$0**		**$0**		**$0**	**$0**		**$913,000**			

LEGEND:

Formula cell

Data entry cell

This section is for post-contract invoicing only. Do not complete with proposal.